

Remarks

Claims 1-19, 21, 26, and 34-52 are allowed. Claims 22, 23 and 27 are indicated on the Summary sheet as objected to and allowed. It is assumed that these claims are allowed.

Claim 30 has been both objected to and allowed. It is assumed that this claim is objected to.

Claims 24, 31 and 53-57 are rejected.

Claims 24 and 31 have been amended by incorporating limitations from claims indicated as allowable. Therefore, these claims should be allowed.

The Applicants thank the Examiner for the telephone interview, during which the art of record and US patent 4,087,657 was discussed. The Examiner indicated that the claims would be allowable over the art of record, but has asked for a formal response so that he can evaluate whether further searching is required.

Applicant respectfully disagrees with the interpretation of Bjork and therefore disagrees with the rejections of claims 53-57 based on Bjork.

Bjork relates to a qualification systems that uses a Time Domain Reflectometer (TDR). A TDR is a device that sends a pulse down the line and analyzes the line based on reflections of that pulse caused by the structure of the line. The pulse is measured as a voltage on the line at different times. Compare, for example, FIG. 2a and FIG. 2b that shows the pulse that is applied and a response.

The TDR works because different conditions on a line reflect a pulse differently. Different faults will make different shaped reflections. The reference, as understood, is teaching how to analyze a line based on the shape of the reflected voltage pulse.

A pulse of the type used in the TDR has very high frequencies. Therefore, the pulse does not travel well through a switch. Note that column 2, line 58 expressly indicates that the line is disconnected from the switch for testing. This requirement is a serious limitation for qualifying a large number of lines in a telephone network.

The present invention is intended to avoid this limitation. Claim 56 expressly claims that the testing is run through a switch. Claim 54 expressly states that the range of frequencies is below that of the high speed data services. Bjork expressly states the opposite. See column 3, lines 50 that states the test signal has a frequency equivalent to the operating frequency of the digital signal.

Bjork does mention that an impedance of the line is measured. As understood, this measurement is used to scale TDR measurements so that results of measurements can be normalized. Please see FIG. 5a, which shows that impedance is determined at step 100. Getting the TDR waveform happens at step 101. Note that the next steps use the TDR waveform for analysis.

There are at least two differences from the claim. First, the impedance is not measured as a function of frequency. The computation of impedance is described at column 4, lines 3-19. The test setup is shown in FIG. 3. There is no indication that the impedance is calculated at multiple frequencies. To the contrary, it appears to be computed only under one set of conditions (which match the conditions when a TDR pulse is applied).

Thus, even if one were to equate an impedance and an admittance measurement, there is no disclosure or teaching of the claimed steps of:

making one-ended electrical measurements over a range of frequencies on the customer line;

determining one or more admittances as a function of frequency of the customer line from the measurements

Second, there is no disclosure or teaching that any bridged taps are found from admittance (or impedance) measurements. Column 5, lines 51-53 describes how the bridged tap is detected in the reference. Specifically, it is detected based on the shape of the reflected pulse. This passage makes clear that the reference is describing the use of the TDR technique to find bridged taps. TDR operates on a voltage pulse – which is very different from a plot of admittance versus frequency. Accordingly, the reference does not meet the claim limitation:

detecting that the customer line has a bridged tap in response to finding a signature of a bridged tap in the one or more admittances as a function of frequency

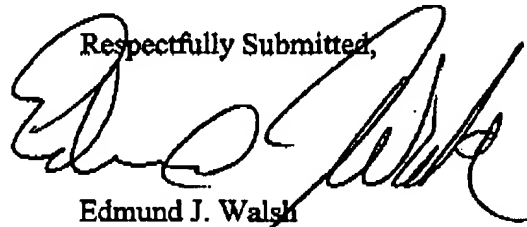
Applicants respectfully contend that there is no teaching or motivation to combine the references proposed by the Examiner. As mentioned above, Bjork specifically teaches that it is incompatible with the features of claims 54 and 56 – which serves to highlight the fact that there is no motivation to combine references to render the claims obvious.

More generally, none of the references teaches that a bridged tap could be detected by a signature in an admittance versus frequency plot.

Conclusion:

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to that effect is earnestly solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Edmund J. Walsh', is written over the typed name and title.

Edmund J. Walsh
Reg. No. 32,980
Attorney for Applicant

Atty. Docket : 1255-US
Telephone : 617-422-2853
Fax : 617-422-2290